BULLETIN OF
THE NEW YORK ACADEMY
OF MEDICINE

MAY 1945

SOME PSYCHIATRIC ASPECTS OF NERVOUS SYSTEM INJURIES*

WALTER O. KLINGMAN, Lt. Colonel, MC, AUS

THE variety of problems produced by nervous system injuries has become increasingly important with the progress of the war. This has called forth a careful appraisal, assessment and formulation of adequate treatment of the peculiar interrelating special surgical, neurological and psychiatric problems involved. This applies particularly to a large group of cases with a disability picture that is labeled "psychoneurosis" or belong to the group labeled "post concussion neurosis" or "compensation neurosis."

The varieties of post-traumatic reactions in terms of relationship between the severity and nature of the injury itself and the somatic and personality responses are often difficult to differentiate, to treat medically, and to rehabilitate socially and economically. It is hoped that the accumulated experiences of many workers now confronted with these problems will give us a more comprehensive knowledge and more efficient therapy with which to meet these situations in both military and civilian cases. Because of the difficulties encountered in differentiation of the traumatic and post-traumatic reactions, classifications of the psychiatric disturbances have not been too satisfactory. The military or war injuries introduce complications which differ in

* Read November 14, 1944 at the Combined Meeting of The New York Neurological Society and the Section of Neurology and Psychiatry.

some respects from nervous system injuries sustained in civilian life. The combination of natural anxieties and tendency to worry or be concerned with prolonged war stress, sense of grievance, constitutional predisposition, malingering or the simultaneous development of a psychoneurosis under circumstances of exhaustion and fatigue, make for added confusion, particularly when there is also structural nervous system change.

In considering the symptoms of acute mental disturbance as a result of general cerebral injury, the most constant results of such injury from the psychiatric standpoint are the disturbances of consciousness. These range from states of transient interference in mild injuries to profound and prolonged states of coma in the most severe cases. Various grades of unconsciousness range between these extremes and for varying lengths of time.

The return from stupor or coma to normal consciousness is usually through a series of stages: coma, stupor, excitement or delirium, combativeness, aggressiveness, confusion and automatism. After full consciousness returns, the patient often is fully oriented but has a period of amnesia, frequently of a retrograde character or a mental haziness which dates from several minutes to hours prior to the injury and extends through until the final return to normal consciousness. This period or gap in the consciousness usually remains as a permanent defect. The return from the state of coma or stupor to consciousness may be associated from minutes, hours, days or weeks with states of semi-coma, confusion, motor activity and conversational ability but throughout the period there may be complete disorientation and inability to maintain sustained thought or expression. This state may be difficult to differentiate from other states of complete dissociation, particularly in the combat area, especially when there is no external evidence of a head injury.

In mild injuries momentary states of confusion or being dazed may be followed by an automatism like that described in cases of epilepsy or following electric shock therapy in which the individual may continue his activities either in a normal or abnormal manner and then may recall no part of them. This also, in the combat area, may lead to confusion, make for unintelligent behavior and totally incomprehensible actions. In injuries of this grade, then, an amnesia and automatism are the striking features.

In other types of mild injury without initial loss of consciousness there may be a form of delayed collapse after minutes or hours, some confusion of an in and out character, momentary blacking out, with or without automatism, supposedly due to an instability of the cerebral circulation consequent upon injury to its vasomotor apparatus, probably the result of damage to the brain stem.

In the severe brain injuries the individual is usually profoundly comatose and shocked. If he lives, coma eventually becomes less deep and the series of events already described begins and much depends not only on the concussion but on the individual's personality. With higher psychical functions temporarily suspended, the content of lower levels stands revealed, whether as a result of edema or from the effects of concussion itself. In these severe cases complete recovery does not always follow and signs of local damage are likely to be found and recovery may never reach the completely normal state. Specific defect disorders, emotional and cognitive changes may appear in the post confusional state.

Conscious activity comprises many different functions which must all be present before the behavior can be said to be normal. Any of these functions can be eliminated selectively by various types of brain lesions. Speech may be impaired by lesions in the temporoparietal area of the cortex. Lesions of the occipito-parietal area may give rise to other special defects. The same rule of breakdown and recovery after cerebral lesions applies to the other higher cerebral functions—memory, orientation, perception and imagination, and maintenance of emotional attitudes and stabile behavior patterns. Elimination of any of these functions resolves itself into a restriction of the background specific to that function. It is on the proper activity of this background that the function itself depends.

Apart from residual symptoms due to such local structural damage as has been mentioned, in some cases symptoms indicative of more general disturbance of cerebral function may persist for varying lengths after cerebral injury and may even be permanent. This is especially true in elderly and arteriosclerotic subjects, where some degree of mental defect is more apt to ensue. These defects express themselves chiefly as defects of memory and of judgment with impaired emotional control, easy fatigue of both attention and of physical effort. These symptoms frequently do not stand in any close relationship to the clinical

severity of the original injury.

As a rule most head injuries tend to recover completely and one infers that no structural damage has been sustained by the brain. In the others, however, it is difficult from then on to correlate persisting symptoms where recovery stops short of complete, as lesions may be present in the total absence of specific signs and symptoms. With the resources now available to us, disorders of cerebral function are more readily associated with discoverable and demonstrable lesions. Much recent outstanding work has been done towards assessing the severity of brain damage and is bringing us closer to more nearly accurate appraisals.

By far the commonest residual syndrome is that of headache, dizziness and emotional instability. This may persist for many months or for many years, is more apt to be long lasting in middle aged and elderly persons and often in patients whose injury is compensable or is carried on as a full expression of a psychoneurosis, sometimes of other origin than the cerebral trauma itself. Lesions in specific parts of the brain may facilitate neurotic reactions of the total personality and the organic consequences of head injuries may become the nucleus around which neurotic attitudes crystallize. The organic nucleus may be transformed, therefore, into that of the neurotic.

This suggests that in the syndrome or in the origin of the psychoneurosis, there is an interplay of physical and psychological factors. Unfortunately, the clinical criteria by which we might hope to distinguish psychogenic from physical elements in this symptomatology are by no means that distinct. At this time it is not considered possible to list or classify by any particular symptoms or criteria, for any symptom may have either psychoneurotic or organic basis, be due to diffuse degenerative change, focal or transient damage or be the expression of a latent psychoneurosis by a generalized physical effect.

Up to this point the psychiatric management of cerebral injuries should be confined to the needs of the immediate post-traumatic state. Very definite improvement in the procedures of management of head injuries in this war has been made soon after stabilization or clear consciousness is regained. Graduated programs of activity are frequently started within 24 to 72 hours after regaining consciousness with return to light duty in two weeks and full duty in six weeks time. One of the outstanding features in this early handling of these cases is the attempt

at complete divorcement from the idea that the injury is serious because it involves the head, that caution must be exercised from over-doing mentally and that such things as dizziness, headaches and nervous symptoms are to be expected. It also helps to eliminate the period of incubation in which the patient is meditating upon the suffering and derangement of his life caused by an accident for which, in most instances, he knows some one else may possibly be made legally responsible. The element of suggestibility by thoughtless reminders on the part of doctors and nurses can be potent factors. Furthermore, the Army hospital is not, as a rule, convenient for frequent visiting or any visiting by well meaning relatives, friends and claim agents who may be so helpful in building that post-traumatic crippled personality of civilian life. On the other hand, in an inaccessible theatre of military operations, treating a patient with head injury who may be emotionally unstable is not prognostically the same as the individual elsewhere, so that the element of secondary gain may be a potent factor in the production of a neurosis in the military theatre of operations. However, by and large, this new important step of immediate post-traumatic management and elimination of the incubation period has gained many converts among the neurosurgeons and neuropsychiatrists in this war.

The incorporation of convalescent and rehabilitation programs, the like of which is difficult to emulate in any civilian hospital, must be credited with much of the reversal of opinion regarding early post-trauma management of cerebral injuries when, not so long ago, prolonged bed rest, reduced physical and mental activity, restraint from duties for many months to a year was not an unusual prescription.

In this early activity phase there is introduced the psychological help calculated to strengthen the ego. Persuasion, strong suggestion, re-identification with the group, and stimulation of the ego-ideal result in an earlier return to active duty status before the stage of actual neurosis formation may be reached. Convincing reassurance, firmness in the pressure to return to duty and strong suggestion is most conducive to avoid binding anxiety to a symptom. Despite this, however, the physiological consequences of the trauma in many cases affect the function and structure of the brain to the extent that they offer material for the neurosis. The trauma brings about psychological change or activates latent or active neurosis of considerable severity. Fear of future ill health and unemployment are frequent natural factors.

When the elements of neurosis begin to dominate the picture the symptoms begin to assume bizarre qualities and to be complained of as being very disabling. Headaches not only become more continuous and fantastic but many other complaints are added. The emotional attitudes change and it is very difficult to explain the attitude perversions on the basis of structural damage to the brain. When these symptoms and changes become apparent, the time then has arrived to evaluate the symptoms and assess the role of psychobiological factors in the symptom complex.

At this point where the elements of a neurosis begin to dominate the picture we again find that there has been definite advancement in psychiatric management. Cases, particularly with anxiety and hysterical features, comprise a high percentage of these reactions, but almost any clinical expression of the psychoneurosis may become manifest. Our first duty is to strive for some appraisal of the physio-psychological aspects of the nervous system injury and attempt to estimate separately the organic residua and psychoneurotic symptoms. Just as in the medical and surgical treatment of nervous system injuries, each case must be studied and treated according to its particular merits. No injury is such a clinical entity for which a cut and dried line of treatment can be prescribed. This is also true of persistent after-effects.

In their order and when necessary, the following are indicated in the clinical evaluation at this point: (1) Painstaking neurological examination. (2) Evaluation of emotional factors and thorough attempt at a sound, rational understanding of possible conflict between the unconscious sources of anxiety and the ego forces together with an understanding of the symptoms produced by psychological defenses, regressions and collapse. (3) Psychological testing by specialized techniques, such as the Rorschach, Shipley-Hartford and others. (4) Electroencephalography. (5) Pneumoencephalography.

Some discussion of these evaluations warrant attention, particularly the evaluation of the emotional factors and methods for combating them. Again, we have profited by the experience of this war in the form of brief psychotherapy instituted in some theatres soon after the appearance of the traumatic neurotic expression, whether it follows injuries to the cerebrum or not. Narcoanalysis, narcosis therapy or narcosynthesis cannot be called exactly new since they have been used in civilian practice for the last ten years or so. Their free use, however,

has been necessitated and catapulted into the foreground by the urgent demands for quick brief therapy in the armed forces. This stands quite in contrast to the last war where rest, sedation and persuasion were chiefly used.

Actually, the application of this technique in prevention and treatment of neurosis following nervous system injuries has added to the understanding of the dynamic conflict between the unconscious sources of anxiety and the ego forces and to the evolvement of short term techniques derived from psychoanalytic principles. In this, time has been gained in that the period necessary to work through resistances in an effort to bring repressed emotions to consciousness has been eliminated. Likewise, uncovered anxieties can be tolerated without lengthy preliminary strengthening of the ego.

Conditions of war bring new factors to play upon the soldier's ego that are distinctly different from the conditions that prevail in civilian life as a result of accidents. The civilian traumatic neurosis occurs usually as a result of a single violent stimulus. The soldier, however, rarely develops his traumatic neurosis as the result of a single experience but as a result of accumulated stimuli, difficult physical conditions, intolerable environmental conditions, protracted separation from supporting and friendly human relationships and of sudden disruption of close personal ties with dead, wounded or injured comrades. The injury here is often the stimulus for a new and serious conflict with the ego ideal, inducing and provoking thereby the psychoneurotic expressions. Narcoanalysis followed by psychotherapy as the patient recovers from the narcosis results often in dramatic release of the unconscious psychological tensions, strengthens the ego forces and decreases the severity of the super-ego pressure. This has resulted in quick return to duty or combat or, at least, return to limited military service status, and in others it has offered the first steps to return to civilian life as useful members of society. This is particularly true of the cases with old latent anxieties and resentments dating back to civilian or early life periods.

Reactions of a depressed nature can be treated with convulsive shock therapy but must be carefully selected. This is another aid available in this war that was not at hand in World War I.

In the cases where it is difficult to distinguish the degree of physiological-psychological damage as a result of trauma, careful neurological examination must be relied upon and, just as the internist may turn to

the laboratory for a final decision, the neuropsychiatrist calls upon laboratory procedures for help. Psychological testing makes it possible almost always to differentiate between organic and psychogenic disturbances. Pneumoencephalography and electroencephalography in selected cases, and when indicated, may uncover definite positive findings of structural and physiological change as a result of the trauma.

These are the patients who require special consideration for their specific handicaps and are potential candidates for prolonged rehabilitation handling. Their worries about cure, livelihood, bodily helplessness and future disturbances of social and economic nature are real and offer a tremendous challenge and appeal for life in the future without dependency on the family or the country.

Another clinical picture presented by effects of injury to the cerebrum by concussion, shell, bomb or other explosion is that associated with subdural hematoma or effusion. The picture here is quite different qualitatively from the psychoneurosis with anxiety or hysterical states encountered after head injury. In the latter, extreme restlessness, motor activity, tension, nightmares and insomnia are prevalent. Noises, sounds of airplane motors, exhaust explosions are triggers sending them into profound anxiety. The subdural cases, to the contrary, present one of two syndromes.

In the most frequent syndrome there is marked retardation in intellectual activity and personality interrelationships. The facies is one of dulness with but little play of facial expression. The emotional tone is flat. Attention is impaired and responses are slow. Answers to questions are devoid of description and detail. The whole approach to life situations is one of superficiality and getting by without complicated mental activity. The patient may or may not complain of headaches but he is usually not dramatic in his complaints.

The less frequent syndrome occurs in those cases of subdural hematoma of longer duration and demonstrates the more classic picture usually associated with the organic reaction types. The most striking feature is the impairment of inhibition or restraint, producing a euphoric and sometimes facetious air. Motor restlessness with exaggerated mannerisms and gesticulations may be prominent. The emotional tone may be labile and explosive. There may be poor judgment, undue productivity, unusual expressions of hostility and lack of restraint. Definite organic intellectual defects in the form of distractability, memory fail-

ure, perseveration and repetition and circumstantiality may be present. Infrequent or minimal neurologic findings are the rule and as a result cases with subdural hematoma or effusion repeatedly are considered functional. Pneumoencephalography and psychological testing are often necessary for a final diagnosis and treatment by the neurosurgeons.

In yet another group there are the debatable cases where the relationship between head injury and mental disease is not so clear, other than that the trauma may serve as the immediate precipitating agent producing a delirium tremens, a schizophrenia, a neurosyphilis or manic depressive or other psychosis. A certain group of these mental changes bear only an indirect relationship to the trauma which acted as precipitant on a pre-existing psychopathic state rather than as the direct etiologic agent. On the other hand, there are a group of organic mental syndromes following brain injury that can be delineated as definite post-traumatic psychopathy in individuals who never had signs of psychopathic states before sustaining injury.

Before closing, a few remarks are in order concerning psychiatric aspects of peripheral nerve and nerve trunk injuries. Just as in cerebral trauma, injury to nerves may precipitate various types of neurotic behavior, either the organic consequences become the nucleus around which neurotic attitudes develop or latent psychoneuroses gain expression by the generalized effect of the trauma and the prolonged effects of convalescence, crippling and handicaping. The demands for capacity to adjust to new situations created in life by these handicaps may be very great. They may be influenced also by the phantoms that may follow amputations of either painless or painful character or may appear in unamputated paralyzed limbs deprived of sensation by injury to the nerves. These lesions force the realization in cases with amputations in accepting physiologically as well as psychologically the shortened limb. One of the great difficulties encountered in these cases is the failure to possess or develop a strong natural aptitude to elongate the limb at will in the use of tools very much like the individual who never succeeds in accepting or incorporating his artificial teeth. The competency of this aptitude for projection varies in different individuals, depending largely upon their stability and their inherent adaptive capacity.

Summary

Out of the war-time experience have arisen certain facts for em-

phasis. Many individuals developing disabling neurosis after head injury suffer from latent or active neurosis before exposure to military life or from neurosis incidental to the war experience. The patient's history frequently gives evidence of previous neurosis, psychoneurotic and neuropathic traits, unsatisfactory sexual adjustment, marked mood swings, seclusiveness, schizoid characteristics, extreme rigidity, excessive timidity, childhood fears, parental dependence, asocial acts, and previous psychological traumata. Individuals with such characteristics in their make-up should not be considered for either military or civil assignments where the elements of special danger and personal physical risks are great. Industry can well afford to profit by methods of selection of prospective employees for such jobs and positions similar in purpose to those used by the armed forces in selection of personnel for highly dangerous and hazardous undertakings, specifically such as in the flying and submarine branches of the service. Even if a psychiatric staff cannot be employed or provided, the development of psychologist selection staffs should be encouraged. The specific psychological tests and appraisals now available leave no excuse for haphazard selection of such employees.

Conclusion

In conclusion, several valuable psychiatric factors have been introduced in the management of nervous system injuries by the experiences of this war. Prophylactic psychotherapy during the management of the immediate post-traumatic phase had reduced persistent disability prospect. Application of short term techniques of therapy based on psychoanalytic principles, followed by sound rehabilitation programs has been most helpful in the treatment of nervous system injuries with subsequent neurotic expressions. Diagnostic and prognostic aids from psychological testing, electroencephalography and air encephalography may be necessary in the full appreciation of either structural damage or the psychoneurotic state. Those cases with mixed pictures of organic and functional disturbances require management according to the merits of their particular cases, either by prolonged psychotherapy, programs of rehabilitation or by the protective environment of institutional life.